

MISSOURI. Conservationist

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[NOTE TO OUR READERS]

Protecting Resources in a Drought

The farm rain gauge measured two-tenths of an inch for the month of July, and we were happy to have that. Missouri has been hit by one of the nation's worst droughts and the lack of rain continues

to take a toll on citizens and our state's natural resources. Our goal in this time of drought is to protect habitat and property from wildfire and to provide increased technical assistance and education to partners and landowners to sustain the health of our forests, fish and wildlife.

The combination of very dry conditions and heavy fuel loads has increased wildfire activity across most of the state. For the last five years the Department has recorded an average of 1,379 acres burned by wildfire in May, June and July. This year the number for these three months jumped to nearly 14,000 acres with more than 900 wildfires reported statewide.

To help prevent wildfire, the Department partners with nearly 800 volunteer fire departments. Each year the Department provides training to firefighters and awards grants to rural fire departments for firefighting equipment and supplies. In addition, through the federal excess equipment program, the Department currently has assisted in obtaining more than \$70 million in equipment, such as trucks, pumps and rakes, for volunteer fire stations.

Currently, all Department field staff are on high alert for fire. This means they have equipment close at hand, are ready to be mobilized and are reporting daily fire activities. A burn ban is in place on all Conservation areas. In addition, 754 Department employees are trained in basic fire suppression, 350 have advanced fire training, and 200 hold national fire qualifications. They are equipped with fire dozers and haulers, outfitted trucks, backpack blowers and other tools needed to fight wildfire.

During the current drought, fire isn't the only threat to our resources; drought conditions affect the overall health of our plants and animals. We are adapting management priorities to accommodate the extreme weather, and are collaborating with partners to address citizens' increased need for support.

Department staff are investigating fish kills on public waters and assisting partners with efforts to limit the extent and duration of the die-offs in public impoundments. They are also working with landowners to prevent low-oxygen fish kills through pond maintenance and watershed management.



Department hatcheries are using less water and adjusting production in response to reduced water availability and associated water quality issues. Recent capital improvement projects, such as renovated fish raceways, production facilities and aeration systems, at several Department hatcheries have enhanced fish production while also helping fish survive during the extreme heat and low

water levels, especially at cold-water hatcheries where spring flows are critically low.

Other drought-related efforts include providing guidance to the U.S. Department of Agriculture during the temporary release of federal conservation program acres for emergency haying and grazing. Staff are also monitoring wildlife and fisheries resources for possible disease and mortality issues associated with the drought, working with landowners to care for stressed trees and to diversify vegetative cover with native plants and grasses so that they are better able to withstand extreme temperatures in the future.

The drought of 2012 may go down in the books as one of the nation's worst. Rural volunteer fire departments and Conservation staff have done an outstanding job of containing and putting out wildfires. Enough cannot be said about Missourians' commitment to the state's natural resources, even during times of severe drought. A sincere thank you goes to all fire departments, volunteer firefighters and citizens working to keep our homes and lands safe from wildfire.

Your Conservation Department is committed to helping you through this challenging period and maintaining healthy forests, fish and wildlife. If you require further information or management assistance, please contact your regional office (phone numbers on Page 3).

Robert L. Ziehmer, director



FEATURES

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by Brett Dufur

MDC is celebrating the 75th anniversary of putting the state's citizen-led conservation efforts into action. In this issue, we highlight the Department's science-based approach to fish, forest and wildlife management.

18 **Calling All Wildlife**

by Jake Hindman, photos by David Stonner

Whether you are a hunter, photographer, videographer or a nature enthusiast, calling in wildlife can be an action-packed challenge.

22 **Working on the Brightside**

by Mark Grueber and Angie Weber, photos by Noppadol Paothong

A new demonstration garden in St. Louis unites and beautifies a community while promoting native plants and sustainable practices.

Cover: Cooper Hill Conservation Area
in Osage County, by David Stonner

📷 16–35mm lens • f/9 •
1/30 sec • ISO 200

Above: Brightside's Neighbors Naturescaping
program enhances green spaces in
neighborhoods throughout St. Louis, by
Noppadol Paothong.

📷 17–40mm lens • f/16
1/200 sec • ISO 800

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MDC FIREFIGHTERS

I live within a half-mile of the area in Mark Twain National Forest, in Christian County, that burned on July 5. I would like to thank all who were involved and contained that fire so quickly.

Several firelines were established around our houses/property, keeping fire away from our homes. Even though our house was not in direct harm's way of the fire, we were told to evacuate, and I'm smart enough to realize it would have been consumed in a short time without the Forestry staff/Conservation Department there that day, establishing those lines and bringing in the helicopters.

The magnitude of equipment and people who spent many hours and did not leave it unattended for any amount of time was unbelievable and amazing. There were two houses and a garage that were in extreme danger of catching on fire and I do not know how they prevented it from doing so. I do realize that the local fire

departments played a massive role as well, and my thanks go out to them, too.

Those men and women fought this fire in extreme heat, with impressive knowledge and a no-nonsense approach to the situation. That is what saved all of our homes.

Rhonda Cook, Bradleyville

Ombudsman's Note: Thank you for taking the time to thank those involved in the recent wildfire suppression. We share your relief that the loss of property was not greater. Our field staff have considerable experience in fighting fires in Missouri and in the western U.S. Those professional skills are of great benefit when needed here at home.—Tim Smith

SNAKES ALIVE

Wow! I really enjoyed the wonderful photo taken of the prairie ring-necked snake [Reader

Photo; August]. I wish the accompanying info about this snake would have said if it is venomous or not.

Also, I read "More Turtle Tips" in the August Letters and want to share a personal experience. I found an injured turtle on the road and took it to the wildlife rehab on Little Brennan Rd. in High Ridge. They told me they do not take care of turtles but were able to call their herpetologist to come and get it. My suggestion is to phone ahead if bringing in a special critter such as a turtle.

Barbara Doshi, Fenton

Editors' Note: The prairie ring-necked snake is nonvenomous and can be found throughout the state. Learn more about these colorful reptiles at mdc.mo.gov/node/6538. For information on other Missouri snakes visit mdc.mo.gov/node/6646. Also, it is always a good idea to call wildlife rehabilitators before bringing in animals. Thank you for the tip.



Reader Photo

WOLF MOTHER

Roberta Barlow captured this picture of a wolf spider with its babies on her family's land near Kirksville. "I spotted this wolf spider with her young about an hour or two before a storm hit," says Barlow. "I didn't realize what it was until I disturbed her and several of the babies fell off. It was fascinating to watch as she stopped while they ran and jumped back on." Barlow says that nearby woods ensure they have a lot of wildlife around the house. She says they like having spiders around to help keep pest insects under control.

PICKLES ON A PONTOON

Can I take my glass jar of pickles on my 24-foot pontoon boat while boating on Lake of the Ozarks?

In the June issue, in *No MORE Glass* [Agent Notes], it states that if I am traveling on waterways by vessel I can't have glass containers unless it holds a substance prescribed by a licensed physician.

In the handbook of Missouri boating laws it states that the glass container law applies only to vessels that are easily susceptible to swamping, tipping or rolling (such as canoe, kayak or inner tube). Which is it? All vessels or easily tipped vessels?

Lawrence Schlipp, Lebanon

Ombudsman's Note: That article failed to make clear that the Missouri law regarding glass containers in boats does only refer to boats that are easily tipped, such as canoes, kayaks and rafts. The law does not apply to pontoon boats. Don't forget your pickles! For the complete law, visit: moga.mo.gov/statutes/C300-399/3060000325.htm.



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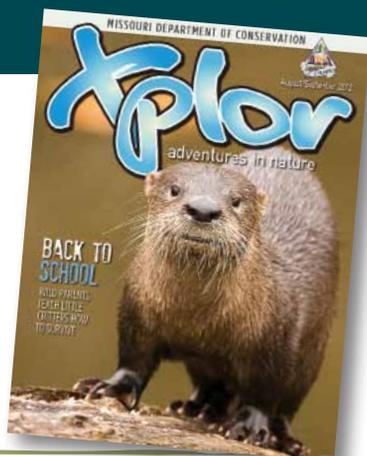
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The North American population of mallards is estimated at 10.6 million this year, up 15 percent from 2011.

Good News for Duck Hunters

The results of this year's North American Duck Breeding Population Survey are in, and the news is excellent. Total duck numbers are estimated at 48.6 million continent-wide. That is a 7-percent increase from last year and up 43 percent from the long-term average. The North American population of mallards, the mainstay species for Missouri waterfowl hunters, is estimated at 10.6 million this year. That is up 15 percent from 2011 and 40 percent above the long-term average.

Mallard numbers have exceeded this year's figure only twice in the past 56 years—1958 and 1999.

Blue-winged teal numbers were estimated at 9.2 million. That is similar to last year's population. It also is 94 percent above the long-term average and nearly twice the 4.7 million needed for the maximum early-season length of 16 days under federal guidelines. This year's early teal season will open Sept. 8 and run through Sept. 23. The Conservation Commission will set opening and

closing dates, bag limits and other details of the regular waterfowl season at its meeting Aug. 24.

Other duck species breeding populations recorded in the 2012 survey include:

- **Scaup**, 5.2 million, up 21 percent from last year and similar to long-term average
- **Shoveler**, 5 million, similar to 2011 and 111 percent above long-term average
- **Gadwall**, 3.6 million, similar to last year and 96 percent above long-term average
- **Green-winged teal**, 3.5 million, up 20 percent from 2011 and 74 percent above long-term average
- **Pintail**, 3.5 million, 22 percent below 2011 and 14 percent below long-term average
- **Wigeon**, 2.1 million, similar to 2011 and 17 percent below long-term average
- **Redhead**, 1.3 million, similar to 2011 and 89 percent above long-term average
- **Canvasback**, 800,000, similar to 2011 and 33 percent above long-term average

Honoring Missouri Citizens

The Missouri Conservation Commission would like to recognize citizens who make outstanding contributions to conservation. Nominations are being sought for the Master Conservationist Award and the Missouri Conservation Hall of Fame. The Master Conservationist Award honors living or deceased citizens while the Missouri Conservation Hall of Fame recognizes deceased individuals. Those who can be considered for either honor are:

- Citizens who performed outstanding acts or whose dedicated service over an extended time produced major progress in fisheries, forestry or wildlife conservation in Missouri.
- Employees of conservation-related agencies who performed outstanding acts or whose dedicated service over an extended time produced major progress in fisheries, forestry or wildlife conservation in Missouri.

Anyone can submit a nomination, which should include a statement describing the nominee's accomplishments and a brief biography. Criteria and nomination forms for each award are available on the MDC website at mdc.mo.gov/node/7763 and mdc.mo.gov/node/7759. Please submit nominations by Oct. 1 to Denise Bateman, Missouri Department of Conservation,

PO Box 180, Jefferson City, MO 65102-0180 or email to Denise.Bateman@mdc.mo.gov.

A screening committee appointed by the Department's director meets annually to consider nominees, with the Conservation Commission conveying final approval.

MDC Managed Waterfowl Hunting

MDC intensively manages 31,988 acres of wetland on 15 conservation areas to provide critical resources for waterfowl and other wetland-dependent species. This intensive management also produces exceptional waterfowl hunting.

To improve hunting and prevent overcrowding, MDC limits hunters on these 15 areas each day. Hunters can participate in a pre-season

reservation system, apply for a Quick Draw position or attend an on-site drawing the morning of the hunt.

The pre-season reservation system accommodates hunters who need to make plans in advance. Reservation holders are guaranteed a hunting spot but vie for line position with walk-in morning draw participants. Applications for reservations are accepted from Sept. 1 through 18 at mdc.mo.gov/node/3806. Reservation drawing results will be available Oct. 1. On areas offering reservations, 50 percent of the hunting positions are set aside for pre-season reservations.

Quick Draw, an online draw system, was designed to enhance convenience, reduce travel time and expense, and offer hunters more flex-

ibility at select areas. Hunters may apply twice a week, once for hunts occurring Friday through Monday and once for hunts occurring Tuesday through Thursday. Applications are accepted a week before the opening of waterfowl season. Quick Draw is offered at Grand Pass, Eagle Bluffs and Otter Slough conservation areas. MDC will continue to solicit public feedback on Quick Draw throughout the upcoming waterfowl season.

On-site, morning drawings accommodate hunters who wish to show-up and vie for a hunting position. Twenty percent of the positions at Quick Draw areas and 50 percent of the positions at the other managed wetland areas are set aside for morning drawings. The positions of reservation holders and Quick Draw



ASK THE OMBUDSMAN

Q: I've noticed some odd, salmon-colored, fuzzy growths on the leaves of my oak tree. What are they, and what should I do to prevent them?

A: It sounds like you have a type of gall on your oak leaves called the fuzzy bead gall. Galls are abnormal growths on leaves or twigs and come in a wide variety of shapes, sizes and colors. They can be caused by the egg-laying of several types of insects, by feeding mites or by fungi, bacteria or viruses. The gall is the growth of the tree that somewhat isolates the damage from the invading organism. The fuzzy bead gall results from the feeding of microscopic mites. The galls should not do any significant damage to your tree. There is no need to take any action unless you want to burn or remove the fallen leaves in the fall. That may reduce the number of galls you have next year.

Q: While driving on a south-central Missouri highway, I saw a huge spider crossing the road. It had a dark-colored body about 2 inches long and, with the legs, was about 5 inches across. My first guess was a tarantula. What do you think?

A: I expect that you did see a tarantula because late summer and fall is the most likely time to see them on southern Missouri roads. They tend to wander at this time of the year. Called the Texas brown tarantula, it is Missouri's largest spider, and it can be found in areas south of the Missouri River. When not wandering, they spend their days in silk-lined burrows in abandoned rodent or reptile tunnels or other natural cavities. They are mostly active at night, feeding on crickets and other small insects. Missouri tarantulas are not aggressive toward humans and tend to frequent habitats where they are seldom encountered.



Texas brown tarantula

Ombudsman Tim Smith will respond to your questions, suggestions or complaints concerning Department of Conservation programs. Write him at PO Box 180, Jefferson City, MO 65102-0180, call him at 573-522-4115, ext. 3848, or email him at Ombudsman@mdc.mo.gov.

(continued from Page 5)

hunters who do not show up are also included in the drawing.

Waterfowl numbers are promising; however, staff are closely monitoring the effects of the ongoing drought. Conditions may influence the availability of hunting spots.—by Shawn Gruber.

Deer-Hunting Regulation Changes

Deer season gets underway Sept. 15 with the opening of archery hunting, and hunters need to be aware of some changes in this year's regulations.

To provide more opportunities, the Muzzle-loader portion of the Firearms Deer Season has been changed to the Alternative Methods portion. Under the new regulations, hunters may use archery gear, crossbows, atlatis, handguns and air guns in addition to muzzle-loading firearms.

Atlatis also are allowed during the Archery Deer and Turkey Season this year.

The discovery of chronic wasting disease (CWD) in north-central Missouri prompted restrictions on wildlife feeding, which can hasten the spread of the disease. Salt products, minerals and other consumable natural or manufactured products used to attract deer are prohibited in the CWD Containment Zone comprising Adair, Chariton, Linn, Macon, Randolph and Sullivan counties. Hunters and landowners also are urged to follow voluntary guidelines on Page 2 of the *2012 Fall Deer and Turkey Hunting Information* booklet. The booklet is available from permit vendors or online at mdc.mo.gov/node/3656.

In a further effort to slow the spread of CWD, the Conservation Commission rescinded the four-

point rule in the CWD Containment Zone. Mature bucks are more likely to have CWD, and they travel more widely than other deer, increasing their chance of spreading the disease. Allowing the harvest of bucks with fewer than four points on one side will reduce this risk.

Hunters with developmental disabilities who have taken a hunter-education course but failed the certification tests may now purchase firearms permits after obtaining an eligibility statement from MDC. They must carry this certification while hunting and hunt in the immediate presence of a properly licensed hunter age 18 or older who is hunter-education certified or exempt by age.

Any member of the United States military currently assigned as a patient to a Warrior Transition Brigade, Warrior Transition Unit or a military medical center now may purchase Missouri resident permits regardless of residency.

New managed hunts have been added this year, and others have been modified. See Pages 20 through 25 of the *2012 Fall Deer and Turkey Hunting Information* booklet for details.

Deer or turkey regulations have changed for some conservation areas. These changes are listed on Pages 38 through 46 of the *2012 Fall Deer and Turkey Hunting Information* booklet.

Hunters Can Help Contain CWD

The infectious agents that cause chronic wasting disease (CWD) are abnormal proteins known as prions. They remain in the soil for years after being deposited through the bodily fluids or decomposing carcasses of infected deer. The majority of hunters process their own deer, so they will play a key role in preventing the spread of CWD. You can help by taking common-sense precautions when processing deer.

The first thing to remember is that CWD prions are concentrated in the spine, brain, spleen, eyes, tonsils and lymph nodes. When processing deer, avoid cutting through bones, the spine or brain. If you hunt somewhere other than home, you need to bring knives and containers so you can bone out meat and leave behind potentially infectious material. Send the carcass, organs and other parts to a state-approved landfill so it will be safely buried. If the landfill option isn't practical, bury the carcass deep enough that scavengers can't dig it up.

Trophies require some precautions, too. Taxi-



Blue catfish

Video Explains Possible Blue Catfish Regulation Changes

A new MDC video explains blue catfish regulation changes being considered for Truman Reservoir, Lake of the Ozarks and their tributaries, including the no-boating zone below Truman Dam.

Anglers and fisheries biologists have expressed concerns about the declining number of larger blue catfish being caught from Truman Reservoir. A survey showed that more than a third of anglers think the quality of catfishing has declined. A study at Truman Reservoir showed that blue catfish 24 inches and larger are harvested at an extremely high rate.

In response to these facts, MDC developed possible regulation changes to address the problem. After presenting those ideas at stakeholder meetings, MDC modified the regulation changes and came up with new proposals designed to reverse the decline and increase the number of larger blue catfish while still permitting substantial catfish harvest.

To view the video, click on the link at mdc.mo.gov/node/8390. The page also has a link for comments on the possible regulation changes.

dermists use artificial forms to create mounts, so there is no reason to keep the skull, which could carry prions. When removing the cape from the carcass, also skin the head. Use a power saw to remove the antlers along with a small portion of the skull that joins them. Clean the inside of the skull plate with chlorine bleach before leaving the area where the deer was taken.

The primary way that CWD spreads is by nose-to-nose contact between deer. Anything that artificially concentrates deer populations increases the likelihood of CWD transmission. For this reason, MDC has banned artificial feeding of deer in the six north-central Missouri counties designated as the CWD Containment Zone. Because CWD could spread to other areas without warning, regulations prohibit hunters and landowners not to feed deer and turkeys.

More detailed information about CWD prevention is found on Pages 2 through 5 of the *2012 Fall Deer and Turkey Hunting Information* booklet. The booklet is available from permit vendors or online at mdc.mo.gov/node/3656.

Peck Ranch Open for Elk Viewing

All of Peck Ranch Conservation Area is open to visitors, and the self-guided tour route is a great way to access some of the best elk-viewing spots. Peck Ranch is open from sunrise to sunset daily. Driving loops are marked with signs. However, keep in mind that parts of the driving tour require high-clearance or four-wheel-drive vehicles, and others may be impassible after rain.



PECK RANCH: DAVID STONNER

Did You Know?

We work with you and for you to sustain healthy forests.

Rural Firefighting Grants

» **\$371,101 in matching fund grant** checks were awarded this year by MDC to rural fire departments for firefighting equipment and supplies.

» **180 fire departments** in Missouri received checks of up to \$3,000 from MDC this summer to help them with the purchase of personal protective gear and firefighting equipment for wildfire as well as structure fires. Fire departments are required to match these funds, which are provided by the U.S. Forest Service and MDC.

» **Nearly \$6,653,794** has been distributed during the past 29 years, to rural fire departments to help them increase the safety of their fighters and provide them with better firefighting equipment.

» **For more information** on rural fire department grants, contact Ben Webster, Forestry Division field programs supervisor—fire, Ben.Webster@mdc.mo.gov.

To get directions and an area map, visit mdc.mo.gov/node/8911, the area headquarters or call 855-263-2355. Photographers are welcome as long as they don't disturb elk or other wildlife.

Elk seek the shade and food of forested areas during hot weather. They tend to graze in open fields in the fall, winter and spring. Their movements are somewhat predictable, but with 23,000 acres on Peck Ranch and more than 220,000 acres in the designated elk-restoration zone, there is no guarantee of seeing elk at any given time and place.

Learn About Trapping

If you are curious about trapping or are a trapper and want to visit with other trappers and learn the latest news about your craft, the Missouri Trappers Association has some events that might interest you. They will sponsor beginner trapping clinics:

- Sept. 8 at Show Me Auction Company, Versailles
- Sept. 29 at Talbot Conservation Area, Lawrence County
- Oct. 6 at Orscheln's Farm & Home, California
- Oct. 6–7 at Talbot Conservation Area, Lawrence County
- Oct. 20 at Orscheln's Farm & Home, Eldon
- Oct. 20–21 at Prairie Star Restoration Farm, Bland
- Oct. 20–21 at Whetstone Conservation Area, Callaway County

The 2012 Missouri Trappers Association's fall rendezvous Sept. 21 through 23 at Sand Spring Resort near Bennett Spring State Park will feature informational seminars, vendor displays and networking opportunities with other trappers. For more information, call John Daniel, 417-818-7308 or Robbie Page, 660-888-2369, or email trapperpage@hotmail.com. For more information about the Missouri Trappers Association, visit missouritrappersassociation.org.

The Missouri Pond Program

A legacy that continues to benefit wildlife

IN THE EARLY 1930s permanent sources of high-quality water for fish and wildlife were in short supply in Missouri. The state was coming out of a severe and prolonged drought, and fish and wildlife populations were declining. In 1938, a study found there was only one water source capable of supporting wildlife throughout the year for every 13,755 acres of land in the state. This lack of water severely limited the range, survival and reproduction rates of rabbits, quail, deer, turkey and many other upland wildlife species. This sobering scenario set the stage for the creation of the Conservation Department's pond program—one of the Department's most successful early programs.

The pond program was the idea of Harold Terrill, an early MDC biologist hired in 1937. Terrill had previously worked for the University Extension Program and their farm pond program. This program promoted farm ponds for livestock watering throughout the state. When Terrill joined MDC he promoted using those farm ponds as sources of water for wildlife and livestock.

The University Extension Program was already an established source of assistance and information to Missouri farmers, so the collaboration was a good fit. The partnership that resulted from MDC and the Extension Program provided a conduit for ideas on wildlife management from biologist to landowner that had never before existed. In its infancy the program mostly provided advice on ponds and their benefits. As the program matured and gained federal support, MDC was able to offer more assistance to landowners. The additional assistance came in the form of equipment for digging ponds, cost share for fencing, piping, livestock-watering tanks and providing fish for stocking ponds.

This program became one of the most successful and important programs of its time, with a main goal of getting water on the uplands for wildlife. In 1941, 682 farm ponds were built. Soon the program, with the help of partners, was responsible for more than 320,000 ponds across the state. This program gave a real boost to upland wildlife populations, and greatly increased close-to-home fishing opportunities. As the program matured, its goals have changed many times over the years. As farm ponds became more common, and water more abundant for wildlife, the Department invested less in building ponds and more in helping landowners manage existing ponds by growing better fish, creating healthier ponds with a better balance of fish species, and maintaining high-quality, close-to-home fishing opportunities.

In 1941 the first farm pond built under the pond program was on the Matt and Margaret Voss farm near Linn, in Osage County. Their sons, Bill and Matt Voss, still own and live on the family farm where the pond exists today, some 71 years later. Bill was 18 years old in 1941 and helped his father build the pond. "We used a combination of either a horse team or a tractor pulling a chipper plow to break up one foot deep furrows of soil at a time across the basin of the pond. Then my father and I used a tractor with a scraper to scrape off the plowed soil so we could start again with the plow," said Bill.

Bill said it took about a month to build the pond and it filled with water almost as soon as it was built. They installed boards along the dam of the pond at the waterline to act as a wave break to reduce erosion and soil loss as they established grass around the pond's perimeter. The pond was fenced off from livestock, and a watering tank was installed below the dam to provide water for the family's cattle.

The brothers recalled that the pond was the only reliable place to fish in the area. The brothers, especially the younger brother, Matt, enjoyed many fishing trips to the pond. He had the pond drained and dug out several years ago, using a bulldozer this time, and restocked it with fish. The pond is still a source of water for wildlife and fishing today.

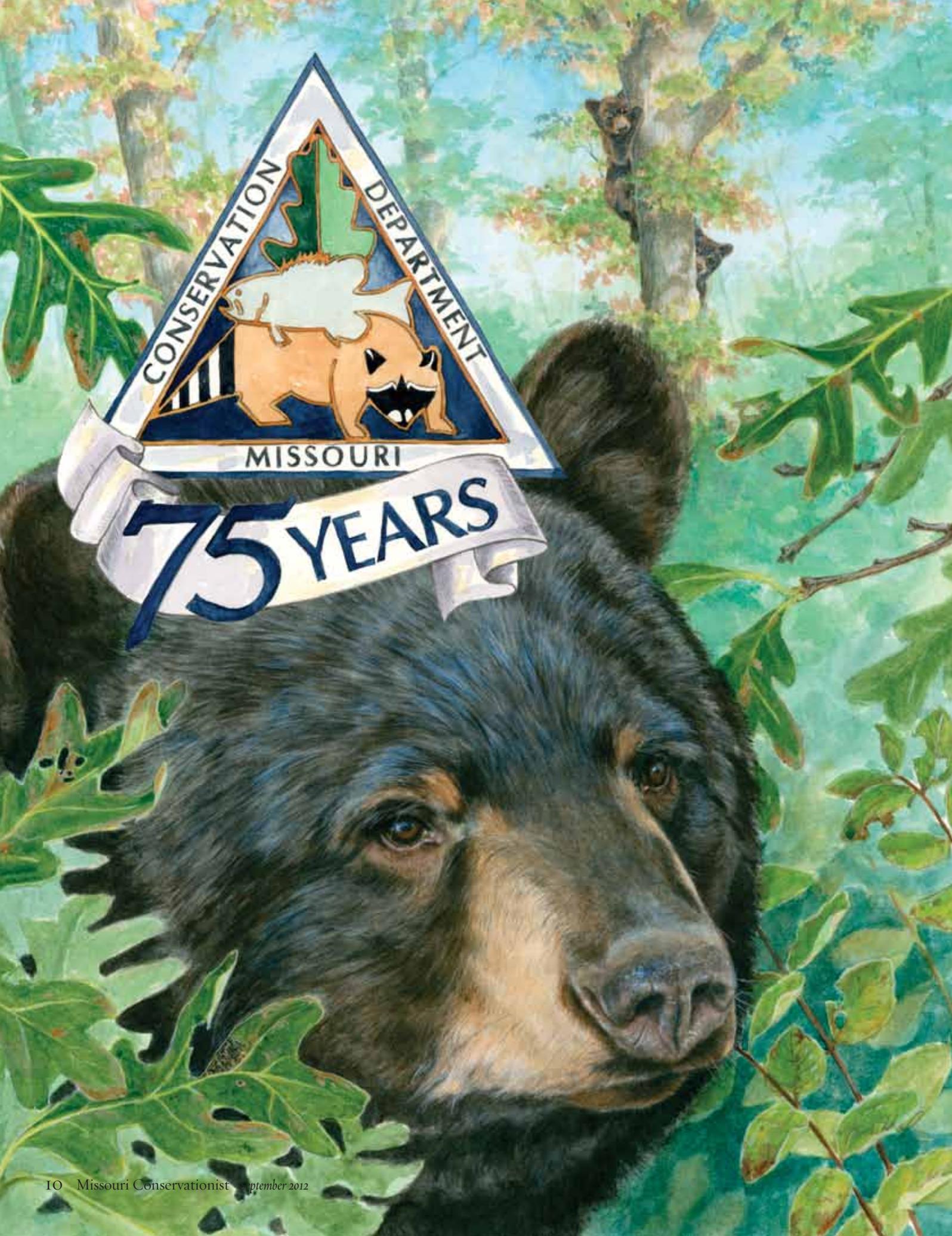
—Scott Williams





In 1941 the first farm pond built under the pond program was on the Matt and Margaret Voss farm near Linn, in Osage County (left). Their sons Bill and Matt Voss still own and live on the family farm where the pond exists today (above).

The Missouri pond program became one of the most successful and important programs of its time, boosting upland wildlife populations and increasing close-to-home fishing opportunities. Today the Department focuses less on building ponds and more on helping landowners manage their existing ponds.



“D

UCKS AND GEESE STRAIGHT ahead!” Excited chatter on the headset interrupts the steady drone of the engine, as the small single-prop plane reaches the extensive wetlands at Grand Pass

Conservation Area. Through the early morning haze, a virtual sea of birds—tens of thousands of waterfowl on their yearly migration—comes into view below.

For the next pass, the pilot banks and drops low. MDC Resource Scientist Andy Raedeke cranes his neck and begins counting the incredible moving mass of birds. The plane follows a grid flight pattern for half an hour. His final calculation: 70,000 mallards, 15,000 green-winged teal, 10,000 pintails, 4,000 gadwalls and widgeon, 1,000 coots, and 500 ring-necked ducks.

Raedeke’s aerial counts help biologists learn how many waterfowl visit Missouri, when they migrate and where they stop to eat. The information helps set hunting seasons and lets wetland managers know how much habitat to provide.

Raedeke contributes to waterfowl conservation efforts not only in Missouri, but efforts that span from Canada to Mexico. He also helped write the 2012 North American Waterfowl Management Plan.

ROOTED IN SCIENCE

Raedeke and countless other Department resource scientists create the foundation of science and research that continue to advance the Department’s mission to conserve the state’s fish, forests and wildlife. Since the Department was founded in 1937, using science rather than politics to guide decisions has been at the heart of science-based conservation.

“One of the tenets of science-based conservation is using facts and data to assist in making wildlife management decisions,” says Dan Zekor, MDC research center unit chief. “Science served as the foundation for our conservation efforts 75 years ago, and that tradition continues.”

Most Missourians would assume this is ‘business as usual,’ but many other states “struggle to get their best information on the table for consideration,” says Zekor. “We are fortunate that good science and public input guide fish and wildlife management.”



Many of the Department’s early fish, forest and wildlife management programs were based on a 1937 wildlife survey that laid the groundwork for the conservation tasks ahead, such as beaver releases, shown above. Other tasks included restocking programs, closed seasons for deer and turkey, and extensive habitat work.

PIONEER IN SCIENCE-BASED CONSERVATION

The Conservation Commission, even in its infancy in the late 1930s, placed high value on the need for solid information to facilitate decision-making. The first Commissioners wrote, “Regarding research, the Commission recognizes that it cannot perform an intelligent job of enforcement, regulation or management without sound basic facts. Fact-finding and research are therefore essential before the Commission reaches any conclusions on important matters.”

Put simply, science and research provide the information needed to address a host of natural resource management issues. Many of the Conservation Department’s early fish, forest and wildlife management programs were based on a 1937 wildlife survey by biologists Rudolf Bennitt and Werner Nagel. Their findings were grim. Only 2,500 turkeys and 2,000 deer remained in the state. Prairie chickens, ruffed grouse, beavers, otters and raccoons also were scarce. Other species, such as elk and buffalo, were gone from the state. This early survey laid the groundwork for the conservation tasks ahead, including restocking programs, closed seasons for deer and turkey, and extensive habitat improvement work.

“When we first started to work, there wasn’t a deer season, and deer had to be transported and introduced



into new areas. And there was no turkey hunting,” says Libby Schwartz, retired MDC resource scientist. “Each of us was given a project to work on. And we feel like we did see a lot of progress in a lot of species. So, I’m real proud of that.”

PARTNERSHIPS ADVANCE SCIENCE

In 1937, the first official act of the Conservation Commission was to support the creation of a Cooperative Wildlife Research Unit at the University of Missouri-Columbia, which worked hand-in-hand with early Department biologists to advance the newly formed discipline of wildlife management.

Today, the Coop Unit is a partnership between MDC, the University of Missouri’s School of Natural Resources, the U.S. Geological Survey, the U.S. Fish and Wildlife Service and the Wildlife Management Institute. This collaborative relationship, with its emphasis on good science to inform natural resources management, benefits all partners in many different ways.

“The partnership between MDC and the University of Missouri’s (MU) Fisheries and Wildlife Sciences Department, in generating the science upon which conservation

MDC Resource Scientist Andy Raedeke’s aerial counts help biologists learn how many waterfowl visit Missouri, when they migrate and where they stop to eat. The information helps set hunting seasons and lets wetland managers know how much habitat to provide.

decisions are made, goes back to the very beginning of wildlife management as a profession,” says Mark Ryan, director of MU’s School of Natural Resources. “This partnership between a state agency and a land-grant university was among the first anywhere and remains a model for other states and nations.”

Because of the diversity of fish and wildlife resources in Missouri, the Coop Unit pursues a broad focus of research, although it has long emphasized waterfowl ecology, big river ecology and management, and stream fishery resources.

“The Missouri Unit has a strong record of serving the science and education of its university, state and federal partners,” says Ken Williams, chief of the U.S. Geological Survey’s Cooperative Research Units national program. “The success of the Coop Unit has relied on



Long-term monitoring of Missouri's natural resources is foundational to understanding biological trends and forms the basis of the Department's science-based conservation efforts. MDC encourages landowner efforts to re-establish shortleaf pine plant communities through technical assistance and by developing pine markets.

the long-standing support of the Missouri Department of Conservation, which has been at the forefront among state agencies in integrating science discovery and its application to solve real natural resources problems.”

Learn more at coopunits.org/Missouri.

LEADER IN SCIENCE-BASED CONSERVATION

Missouri has a long legacy of creating and implementing science-based conservation. “Many fish, forest and wildlife management techniques used around the world today were developed by MDC researchers,” says Mike Kruse, MDC resource science division chief. “We were the first to use and evaluate length limits in fish populations, the first to develop artificial feeds for rearing trout, the first to rear hellbenders in captivity, and the list goes on and on. When you look back at the research, science and management techniques developed by the Department, you realize we are truly standing on the shoulders of giants.”

In one example of early Department research, after Lake of the Ozarks and Truman reservoirs were established, wild paddlefish movements upstream to spawning habitats were blocked. To provide recreational paddlefish angling opportunities, Department biologist Charles Purkett found paddlefish eggs and fry, and studied paddlefish spawning requirements. Department biologist Tom Russell and Hatchery Manager Jerry Hamilton learned how to hatch and rear paddlefish to boost their numbers. Missouri now has some of the best paddlefish fisheries in the country, thanks in large part to those early conservation efforts.

In another example of early Department research, biologists Allen Brohn and LeRoy Korschgen developed a precipitin test to distinguish deer meat from other meats. This test was allowed in courts and assisted conservation agents in prosecuting deer poachers. Today, conservation agents still rely on sound scientific evidence to solve wildlife crimes. Modern-day techniques utilizing DNA testing now help conservation agents bring deer poachers to justice.

Several recent science-based conservation successes benefit the hellbender, an endangered aquatic salamander. Department Herpetologist Jeff Briggler and Hatchery Manager James Civiello successfully collected and hatched hellbender eggs from the wild. Working in collaboration with the St. Louis Zoo, they have successfully reared juvenile hellbenders for release back into their

native streams. In addition, Briggler, Fisheries Management Biologist John Ackerson and Fisheries Technician Chuck Wichern successfully pioneered the use of artificial nesting structures for wild hellbenders in Ozark streams. Biologists in other parts of the country are now using these structures to increase the numbers of this declining salamander.

“We’ve always had some of the best people in conservation, who have used science to guide their work. They are leaders in their respective fields and are frequently invited to other states and even other countries to help solve complex conservation problems,” says Kruse.

LONG-TERM MONITORING

Long-term monitoring of Missouri’s natural resources is foundational to understanding biological trends and forms the basis of the Department’s science-based conservation efforts.

“The Department’s biologists and foresters have countless long-term monitoring efforts underway, many of them with decades or more of historical data,” says Kruse. “This information allows us to track the status of fish, forest and wildlife resources and do a better job of managing them in the future.”

Missouri’s biggest outdoor laboratory is the forest itself, where a 100-year study is now underway. Launched in 1990, the Missouri Ozark Forest Ecosystem Project (MOFEP) is monitoring how different management practices affect a more than 9,000-acre expanse of Ozark forest.

“Forests operate on a different time scale than people. To understand them, you have to work on their time scale. The longer we stay with our study, the better we will understand how to sustainably manage Ozark forests,” says MOFEP Field Coordinator Randy Jensen.

MOFEP seeks to answer how different forest management practices influence abundance and reproductive success of birds, tree growth, species composition and regeneration, and how much carbon Ozark forests sequester. This collaborative research project involves biologists and foresters from the Department, U.S. Forest Service, the University of Missouri, Missouri Department of Natural Resources and numerous other agencies and universities. Learn more at mofep.mdc.mo.gov.

“This is an ambitious project unlike anything else of its kind,” says MDC State Forester Lisa Allen. “The more we learn, the better job we can do at managing Missouri’s forests. Since forests are always evolving and changing,



Belted crayfish

Missouri has become an international leader in crayfish research and conservation because the Department and partner agencies recognize that crayfish literally fuel many of our sport fisheries. They contribute substantially to the state’s biodiversity and to the productivity of many other wildlife species in and around Missouri water bodies.

that’s where we need to be—using the forest as a classroom, to study it in real-time.”

Long-term monitoring also helps biologists better understand how to manage Missouri’s waters and improve the state’s fisheries. “Thanks to our science-based approach to conservation, we now have a much deeper understanding of how our natural resources function,” says Bob Hrabik, a MDC biologist specializing in fish taxonomy and natural history.

“In the Department’s early years, checking the catch of an angler—called a creel census—was a primary way to keep tabs on fish populations. Over time, science-based techniques and technology have evolved, offering today’s Department biologists a much broader range of tools and methods to survey and track the health and changes of Missouri’s fisheries,” says Hrabik. “Some examples include improved trawling and electrofishing methods, the use of reward tags and surgically implanted data storage tags in telemetry studies, and collaborating with other state and national fisheries monitoring efforts. These techniques allow us to study fish movements, describe patterns in migratory behavior, and predict spawning success with many species, including stur-



geons, paddlefish, catfish, and many other recreationally and commercially important fish.”

The Department’s Resource Assessment and Monitoring Program (RAM) monitors long-term trends in the health of Missouri’s warm-water, wadeable streams. This database helps direct conservation work to where it is needed most. Sampling sites are chosen at random from 17,507 miles of permanently flowing, but wadeable, Missouri streams.

“The program’s focus is on the living organisms in streams because their well-being is the ultimate goal of our stream conservation efforts,” says Matt Combes, Department resource scientist and RAM coordinator. “Fish and macroinvertebrates are affected differently by water quality and disturbed habitat, so it is important to sample a variety of organisms.”

One of the state’s longest, continuous monitoring programs is the Long Term Resource Monitoring Program for the Mississippi River. Staff at the Big Rivers and Wetlands Field Station in Jackson monitor a 50-mile stretch of the Mississippi River and provide managers, scientists and decision-makers with information on the long-term changes in fish communities, water quality, riverbank vegetation and land use.

To further monitor and improve fish, forest and wildlife management, MDC operates five field stations around the state, in Kirksville, Clinton, West Plains,

“In the Department’s early years, checking the catch of an angler—called a creel census—was a primary way to keep tabs on fish populations,” says Bob Hrabik, MDC biologist. Today, Department biologists have a broad range of methods, such as electrofishing, to track the health and changes of Missouri’s fishes.

Chillicothe and Jackson. Each field station has statewide responsibility for a designated ecological system: agricultural, grasslands, forests, and large rivers and wetlands along the Missouri, and Mississippi rivers, respectively.

“Field stations advance resource management by investigating questions surrounding fish, forest and wildlife management,” says Rochelle Renken, MDC resource science field chief. “At the field stations, researchers and managers work together to develop and evaluate solutions to management challenges. Examples of such collaborative work are evaluations of prairie chicken translocations, the effects of prescribed burning on the wood-product value of trees, and wildlife use of federally funded conservation practices in agricultural landscapes.”

BALANCING THE NEEDS OF PEOPLE AND WILDLIFE

Science-based conservation balances the needs of people and wildlife. How Missourians use and interact with



The process for adding or changing regulations, such as hunting season dates, in the Missouri *Wildlife Code* begins with evaluating the science-based needs for the change in addition to obtaining feedback from the public.

the state's fish, forests and wildlife is taken into account when making management decisions.

"Citizen input and involvement are critical to conservation," says MDC Director Robert L. Ziehmer. "Part of delivering excellent public service is to listen and understand what Missourians say about conservation programs and services. The challenge is gathering public opinion in a way that is scientifically sound and unbiased."

Last year, these efforts included a survey of firearms deer hunters, a landowner and deer survey, a survey of small-game hunters, a survey of spring turkey hunters, 16 waterfowl season meetings, a timber price survey, and visitor surveys at Springfield and Powder Valley Conservation Nature Centers. This information helps guide decisions about regulations and resource management.

"Surveys tell us that 91 percent of Missourians are interested in Missouri's fish, forests and wildlife. And that a majority of Missourians feel the Department of Conservation is doing a good or excellent job of providing services to them, their families, community and the state," Ziehmer says.

REGULATIONS

In the early days of the Department's existence, regulations may have only focused on the need to protect species by designating open or closed hunting and fishing seasons. Today, developing regulations to support fish

and wildlife management is vastly more complicated. The process for adding or changing regulations in the Missouri *Wildlife Code* begins with evaluating the science-based needs for the change in addition to obtaining feedback from the public.

"In the case of deer management, we must consider not only what is good for deer, but also the social carrying capacity—what number of deer people will tolerate, which is a much lower number than the biological carrying capacity," says Jason Sumners, MDC deer biologist.

"We also take into account changing attitudes. Each year, the Department measures deer hunter attitudes and tracks trends. All of these surveys and scientific measures allow us to make well-informed decisions. Collecting long-term data and modeling that information is what allowed us to develop and implement the 4-point antler restriction regulation we now have in place," says Sumners.

THE PROMISE CONTINUES

The promise to work with Missourians, and for Missourians, for wildlife restoration and conservation continues today. In 2011 and 2012, elk were released in a defined restoration zone in Carter, Shannon and Reynolds counties. Wild elk, formerly abundant in the state, had not been seen in Missouri since 1865.

Science-based conservation is also helping biologists study black bear populations, hatcheries staff improve state fisheries, landowners create better habitat for quail and prairie chickens, and is giving a number of state and federally endangered species a fighting chance. Many other conservation success stories are also grounded in the science created, honed and implemented by numerous Department biologists over many decades.

What began 75 years ago as a "grand experiment" in conservation has evolved into today's Department—a national leader in fish, forest and wildlife management and conservation—with management decisions guided by sound science. That science balances the needs of Missouri's people with the needs of the state's fish, forests and wildlife.

"Nationwide, the Missouri Department of Conservation is looked up to because we have led the way for so long," says Glenn Chambers, retired MDC biologist and filmmaker. "And we've done a good job of delivering what we've promised. That goes a long way with keeping the public with you." ▲

Calling All Wildlife

Whether you are a hunter, photographer, videographer or a nature enthusiast, calling in wildlife can be an action-packed challenge.

by JAKE HINDMAN • photos by DAVID STONNER

MY PRESENTATION ENDED AND A young boy made his way to the front of the room. “How did you learn to call so well?” he asked, smiling.

“I started practicing when I was about your age,” I told him, “and I never stopped; I drove my parents crazy.”

Reflecting on my introduction to game calling, I probably drove the local animals crazy, too. After winning or placing in more than 25 turkey-calling competitions, carrying on conversations with countless animals, and speaking to hundreds of people each year on calling techniques, I have learned what works for calling wildlife. Being successful at calling in wildlife is much more than being able to call well; the real calling competition occurs in the wild, where the animals are the judges. >>





The Four “Rules” of Calling Wildlife

Consistently calling in animals can be difficult. Calling them in close is a greater challenge. Scenarios from one encounter to another are completely different and unsuccessful attempts frustrate many callers. However, some constants do exist. Paying close attention to four guidelines can make communicating with wildlife more predictable than not.

>> **Right Place**

Regardless of the type of animal you want to call in, being in the right place is paramount. It is impossible to call in an animal if it is not in the area. Scouting helps determine locations that are frequently used.

During scouting trips, determine where animals’ preferred spots are at different times of day. By recording your observations, a set-up location can easily be identified. If during your outings you don’t lay eyes on any animals you intend to call in, don’t fret. Several years ago, I gained permission to predator hunt on a new farm in southern Missouri. During my first scouting trip I didn’t see any coyotes but quickly found coyote scat, and the area was riddled with tracks. I returned three weeks later and called in a mature male coyote on the first set. Not only did my scouting trip confirm the presence of coyotes, I was also able to pick a successful set-up based on my scouting observations.

By scouting and determining the right place, callers have a higher chance of connecting with an animal. Calling an animal into a place it already wants to be can make you look like a world-champion caller.

>> **Right Call**

Learning to communicate with wildlife is like learning to speak a different language. Vocabulary is a primary tool for a language student, and animal communication is no different. Often, calls are made to animals that mean something totally different than what we intended to say. Biologists have been able to determine what most calls mean to an animal and how to understand the individual language of different animal species. Fortunately, the calls of just about any animal are available. Before you head afield, do your homework and spend some time familiarizing yourself with the language of the intended species.

Animal Audio

To learn calls of various animals, check out the *Xplor* website for great audio of animals in the wild. Go to xplor.mdc.mo.gov/xplor/video-sound/all for more information.



In addition to learning the language of the species, it is important to learn how to duplicate the calls of that animal accurately. While attempting your first calls, don’t get discouraged; some animal sounds are easy to duplicate, but others take practice. Pick up a few commercial calls or try your hand at mimicking animal calls with your natural voice. Whether you choose to buy man-made calls or produce your own, make sure you spend time honing your skills. Your calls don’t need to be perfect, animals will regularly respond to average or below average calling, but more realistic calls mean a better response.

>> **Right Time**

Say something at the wrong time and a conversation can go sour. Timing in any type of communication is important. With respect to animal communication, game callers must be aware of the time of year. For many species, the calls used to lure in an animal change as the biological needs of the animal changes. For deer, while grunting might be normal all year, the intensity and types of grunts may vary as the rut approaches. Rattling is not as common in September as it is in late October or November. Successful game callers use this knowledge and apply it whenever appropriate.



Understanding how an animal reacts to your calling and applying different techniques or calls based on that reaction often defines success.

>> **Reaction**

Reaction determines the success of any communication. When calling wildlife, the reaction of the animal will indicate if you need to call more or change calls, or if the animal simply isn't interested. You can determine the reaction of the animal by paying close attention to verbal and nonverbal cues. For verbal cues, a call back from the animal is a good sign. Unless, of course, the call the animal made is in alarm or distress. Knowing the language of the animal and what each call means is worthy of mention again. Most successful callers agree that more is less when it comes to calling wildlife; only call enough to keep the animal interested and heading in your direction.

If you are fortunate enough to see the animal while you are calling, nonverbal cues can play a huge role in the types of calls that are used. Pay attention to how the animal reacts when the first call is made. If the animal turns and heads the other direction, maybe a different call or technique could be tried. If the animal starts heading your

Gain Permission on Private Land

More than 90 percent of Missouri is privately owned. If you intend to set out on private land, make sure you gain permission well before your planned trip. Here are a few tips to help secure a location on private property.

- Always ask permission before your planned trip
- Always leave the property better than you found it
- Always obtain permission to bring a guest
- Always state in detail what you would like to do on the property
- Always be polite and respect the landowner's wishes

way, get your camera, bow or firearm ready! While fall turkey hunting several years back, my brother and I spotted a flock of five gobblers on a field edge and worked our way to within 100 yards of the group. My series of coarse gobbler yelps had been ignored by the bachelor group. "They are not interested," I whispered to my brother, "let me try some hen yelps." After offering a series of cutts and yelps, the gobblers immediately moved from their loafing area and worked to within easy gun range. Being able to see the reaction of those gobblers played a huge role in the success of that hunt.

Nonverbal communication varies amongst species so be sure and research the behavior of your intended species before you set out. Understanding how an animal reacts to your calling and applying different techniques or calls based on that reaction often defines success.

Putting it All Together

Having an animal in close is important for hunters, videographers, photographers and others. Calling is one proven method to get animals close and also makes for an exciting experience. Calling animals can also serve as an excellent way to connect with nature and to understand how animals interact. Success at calling wildlife requires that participants scout and find animal hot spots, spend time learning animal communication and learn how and when to apply different calling techniques. Calling in an animal can be a tremendous experience and is a great way to introduce children to the outdoors. Get outside and discover how fun and action-packed communicating with wildlife can be! ▲

For more on communicating with wildlife, check out Jake Hindman at a Calling All Wildlife (CAW) program. During his presentation, Jake performs more than 50 animal calls with his natural voice including calls of many species of birds, frogs and multiple mammal species. Email Jake at Jake.Hindman@mdc.mo.gov for more information.

Working on the *Brightside*





A new demonstration garden in St. Louis unites and beautifies a community while promoting native plants and sustainable practices.

by MARK GRUEBER and ANGIE WEBER • photos by NOPPADOL PAOTHONG

The Marines selected the Brightside demonstration garden as their premier community service project during Marine Week St. Louis 2011.

A SMALL CORNER IN ST. LOUIS IS now brighter and greener thanks to Brightside St. Louis and its many generous supporters. Four years in the making, the demonstration garden and learning center adjacent to the Brightside office is finally complete.

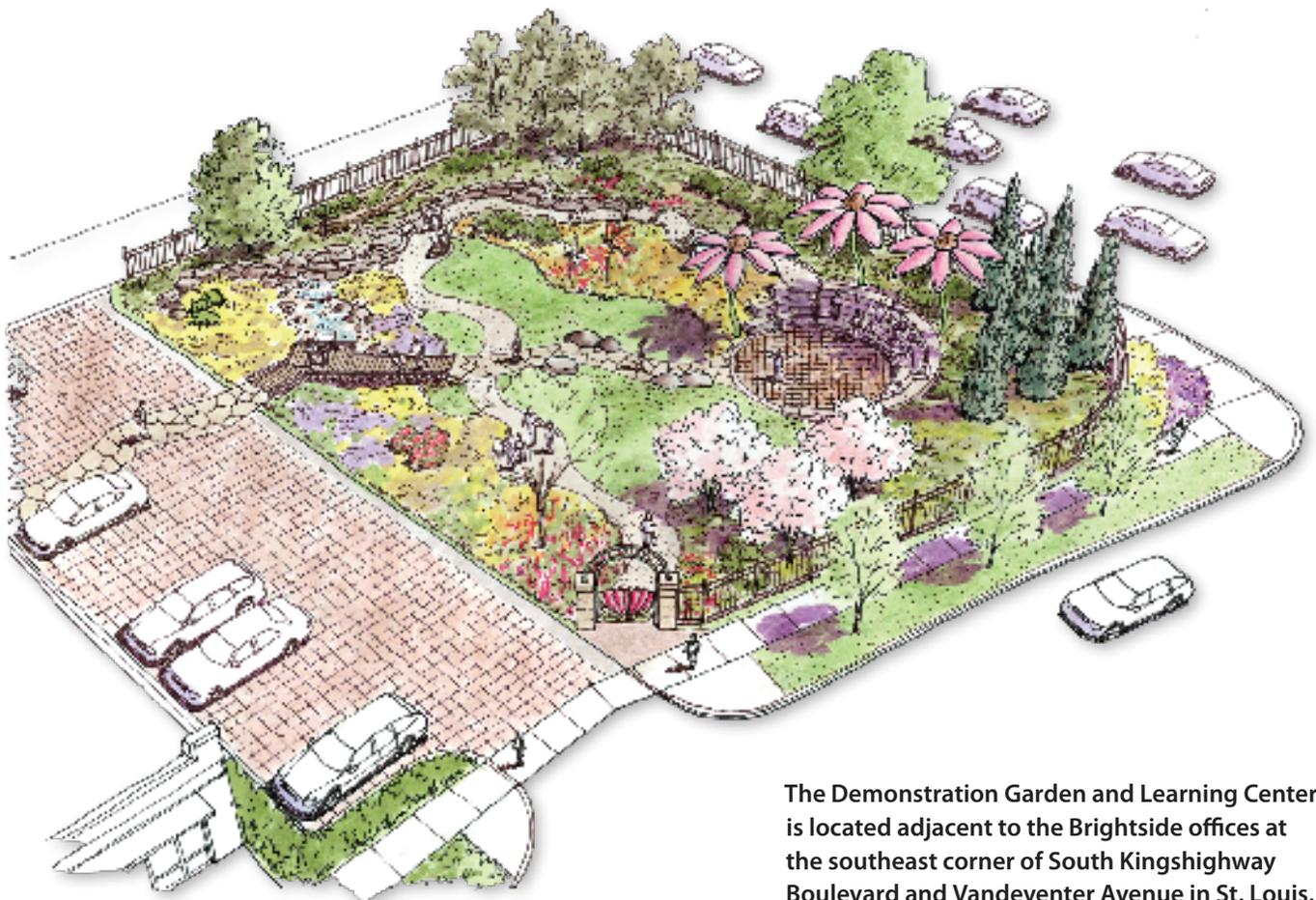
Many organizations contributed financial or in-kind donations to the project, and the installation of the garden required more than 1,000 volunteer hours, which were contributed by the U.S. Marine Corps, Master Gardeners, Missouri Department of Conservation, Missouri Department of Natural Resources, Flora Conservancy and Brightside volunteers. In one week's time, the site was transformed from a barren city lot into a vibrant community garden.

Twenty Marines broke ground on the project in the blazing summer sun. They spent most of the week moving tons of rock, spreading truckloads of mulch, and installing 2,700 native plants, shrubs and trees. Despite the heat, they stayed positive and engaged and wanted to learn as much as they could.

Throughout the week, the Marines developed a sense of ownership in the project and a strong connection to the community. By mid-week, they had requested to stay in St. Louis an extra day to participate in the first educational workshop and connect with the residents who would reap the benefits of their hard work. The community welcomed the Marines with an outpouring of appreciation and support. Each day people drove by and honked, waved or shouted encouragement. Local restaurants donated breakfast and lunch every day and neighbors brought food and drinks, including one young boy and his mother who brought Popsicles.

Showcasing Natives in Nature

Brightside's Neighbors Naturescaping program focuses on enhancing green spaces in neighborhoods throughout St. Louis with an emphasis on planting Missouri native flowers, shrubs and trees. Project leaders request material from a recommended plant list and participate in educational workshops. Visitors



The Demonstration Garden and Learning Center is located adjacent to the Brightside offices at the southeast corner of South Kingshighway Boulevard and Vandeventer Avenue in St. Louis.

CONCEPT ILLUSTRATION PREPARED BY SWT DESIGN, ST. LOUIS



to the new demonstration garden and workshop participants will be able to see the recommended plants in their natural growing conditions. Also, the new learning center is home to the Neighbors Naturescaping hands-on workshops, which provide the perfect opportunity for neighborhood leaders to learn about native plants and sustainable practices.

The vacant lot adjacent to the Brightside office had been an eyesore in the neighborhood for more than two decades. Turning this lot into a beautiful green space met Brightside's mission, so they turned to MDC for help. Mary Lou Green, Brightside executive director, contacted Urban & Community Foresters Rob Emmett (now retired) and Mark Grueber in 2008. Building on the basic idea of teaching people to "plant the right tree in the right place," the plan expanded into developing a site that would demonstrate the benefits of a functional and sustainable landscape. Perry Eckhardt, then a Conservation Department community conservationist, was added to the team and the

A Community Effort

Brightside St. Louis (formerly known as Operation Brightside) was founded in 1982 and initially began as a public-private partnership teaming community residents with city government to clean up neighborhoods. Brightside has cleaned up millions of pounds of trash and debris and planted millions of flowers to beautify public spaces in St. Louis. In honor of its 30th anniversary, Brightside mobilized hundreds of volunteers to plant 500,000 daffodils this year.

Brightside staff and volunteers organize cleanup events and community plantings. Through their efforts, they have succeeded in bringing a variety of community stakeholders together including volunteers, businesses, neighborhood associations and local governments to enhance the livability of St. Louis. Brightside works with all of the 79 neighborhoods in the City of St. Louis on a variety of cleaning and beautification projects.

concept of the demonstration garden and learning center was born.

With the expertise of SWT Design, a St. Louis-based landscape architecture firm, the concept was fashioned to re-create microcosms of ecosystems found in Missouri. Using plants that are native to Missouri wetland, glade, prairie



Mary Lou Green, Brightside executive director, contacted MDC foresters for help in developing a site that would demonstrate the benefits of a functional and sustainable landscape.

and woodland habitats, visitors to the garden learn more about the site conditions where certain plants thrive. Although the soils in most suburban and urban landscapes have been dramatically altered due to development, homeowners can find areas of their yard that have conditions similar to a wetland, glade or other habitat. When a gardener understands how to match plant species to the habitat where that plant is naturally found, they create a functional and sustainable landscape.

Plants that are matched to their natural growing conditions reduce the need for supple-

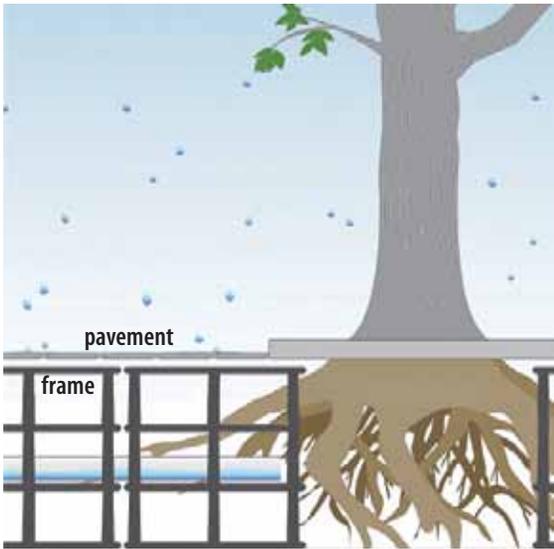
mental watering, fertilizers and pesticides. Traditional landscapes often include exotic plants and vast expanses of turf grass, which require a great deal of resources. While some may like the artificial appearance of a green lawn, it provides little, if any, benefit as wildlife habitat. The seeds and berries produced by native plants are important food sources for a variety of birds and mammal species. Many insect species also depend on native plants for food. Hence, the presence of native plants in urban landscaping is essential to maintaining the natural biodiversity of our region.

Managing Nonpoint Source Pollution

The Section 319 Nonpoint Source Management Program was established under the 1987 amendments to the Clean Water Act. Point source pollution refers to contaminants that come from a specific source, such as pipes from sewage treatment plants and industrial facilities, which often directly discharge to waterways. Conversely, nonpoint source pollution (NPS) comes from indirect sources and includes sediment, motor oil, animal waste, fertilizers and pesticides. Rain then washes these pollutants from hard surfaces such as parking lots and roads into local waterways via storm drains. These pollutants have harmful effects on drinking water supplies, recreation and aquatic life. According to the EPA, NPS is the leading cause of water quality problems in the US. Grant funding enables states, territories and tribes to monitor, assess and educate their constituencies about NPS and protecting water quality.

Technology and Technique

Beyond the wildlife and aesthetics, the garden's design tackles the huge issue of stormwater. For years, the prevailing stormwater management strategy had been to capture, pipe, and almost immediately send runoff downstream. Erosion, flash flooding, water pollution and lost aquatic habitats have resulted. To combat this problem, permeable pavements, cisterns and rain gardens were installed so that not one drop of rainwater leaves the site to enter the city's sewer system. This type of design is called Low-Impact Development (LID) and it uses engineering strategies and natural processes to manage stormwater as close to the source as possible.



Silva Cells use modular blocks filled with soil to grow healthier trees and manage the rate, quality and volume of stormwater. Uncompacted soil allows expanded root zones, giving trees stability and access to more water and nutrients. The framework provides support for pavement, space for underground utilities and prevents roots from cracking pavement.

Because this project provides important public education on techniques that improve water quality and reduce stormwater into the system, the Missouri Department of Natural Resources and Region 7 of the Environmental Protection Agency (EPA) provided the project with a Clean Water Act Section 319-grant to fund the installation of these aspects of the design.

Another important demonstration included in the Brightside garden is how to make use of small areas to successfully grow trees. In many communities, trees are planted in “boxes” that may measure smaller than 3 feet by 3 feet within sidewalks and parking lots. Foresters call these coffins due to the short (less than 10 years) life span of the trees subjected to these harsh conditions. Tree roots need large areas to expand in order to absorb adequate water and nutri-

ents as well as provide support for their large canopies. Because the pavement limits their root space, the trees are often short-lived. Tree roots also damage sidewalks in their attempt to grow. Good engineering and sound forestry practices offer an alternative to improve tree health, eliminate pavement damage and allow us to enjoy the aesthetic and functional benefits of large shade trees, which includes intercepting storm water, reducing pollutants and reducing energy consumption. To find out how much benefit your shade trees provide, visit this tree benefits calculator website at itreetools.org/design.php.

During the second phase of the project, the Silva Cell suspended pavement system will be used to provide rooting space beneath a large expanse of sidewalk (see graphic left). Additional 319 grant funding through the Missouri Department of Natural Resources will help make this first-of-its-kind installation in Missouri possible.

Our Shared Vision

Building this garden was an example of partnership at its best. From the nurseries that donated native plants to the businesses, foundations and governmental entities that supported this undertaking, more than \$500,000 was invested in this endeavor. Today, neighbors have a beautiful green space that provides respite from the built environment and provides the opportunity to connect with nature. In St. Louis, the Conservation Department is supporting such initiatives that encourage urban residents to experience first-hand the beauty and wonder of the natural world.

“Many partners contributed, yet the staff of the Conservation Department embraced this idea and, through their vision and expertise, made this project a reality,” praised Green, Brightside’s executive director. “We invite everyone to stop by, enjoy the beautiful garden and learn a little bit about how the Conservation Department is making a difference in the St. Louis community.” ▲

The following partners contributed cash or in-kind support to the project Environmental Protection Agency Region 7 • Missouri Department of Natural Resources • Missouri Department of Conservation • Cornelsen Charitable Foundation • William A. Kerr Foundation • Edward K. Love Conservation Foundation • Employees Community Fund of Boeing St. Louis • Alberici Constructors, Inc. • City of St. Louis • Dana Brown Charitable Trust • Philpott Family Foundation • Crawford Taylor Foundation • Ameren • Korte Company • Peabody Investments • St. Louis Composting • Forest ReLeaf of Missouri • Bohn’s Farm • Forrest Keeling Nursery • Prairie Hill Farms • Home Nursery • Jost Greenhouses • Missouri Wildflowers Nursery • Schroeder Sod Farm • The Home Depot • Fred Weber, Inc.

Blue-Winged Teal

Fall migration brings these small ducks and their great flying stunts to our waterways.

WE MOTORED UP the Missouri River from the Washington boat ramp with a bucket of green sunfish and four trotlines adorned with huge circle hooks. The other half of “we” was my wife, Joyce, and she was indulging me in yet another “date-night” on the Big Muddy, in search of flathead catfish. It was a hot September day about 15 years ago, and the last thing on my mind was duck hunting. I had only started chasing waterfowl a year earlier, and most of my hunts had featured spitting snow and northwest winds. As we rounded the tip of a trail dike, in search of a deep eddy hole for the first line, we came upon a large raft of blue-winged teal. I put the motor in reverse and eased away from the nervous puddle ducks. Later, I learned that early teal season would open the following Saturday so I set my sights on a late-summer hunt. My first teal opener turned out to be a bust, but that didn’t discourage me from hunting them for the rest of the season and many to follow.

Blue-winged teal (*Anas discors*), are typically the first waterfowl to arrive in Missouri during the fall migration. Their distribution is statewide and they can be found in ponds, marshes, lakes and large rivers. Flying in tight clusters that lack the formational structure of other species, blue-wings possess amazing aerodynamic prowess that allows them to turn on a dime, spring vertically from the water and even land with the wind at their tails if necessary. Those flight skills, combined with their diminutive size, make them a formidable challenge to duck hunters. Drake (male) blue-winged teal are brown with dark speckles on their breasts and sides. The drake’s head is slate colored with a bold white facial crescent. Breeding plumage includes a subtle streak of violet along each side of the head. The female is brown with dark scalloping and a dark streak through the eye. In flight, a powder-blue patch can be seen on the upper wings of either sex.

Blue-winged teal feed on submerged vegetation, insect larvae, crustaceans and seeds. I often see them dabbling along the fringe of the marsh in thick vegetation where they become nearly invisible. Blue-winged teal nest on the ground in vegetation near water’s edge and the eggs are incubated by the hen alone. After 24 days, the ducklings hatch and head to water immediately. If you are lucky, you might see a brood of teal swimming with their mama right here in Missouri as our state is part of their breeding range.

In case you’re wondering, I can’t remember how many flathead catfish we caught the next morning after that late-summer teal discovery. I was so excited about an early duck hunt I didn’t pay much attention to the task at hand. I’m sure if I were to check my records, I would find that we made an impressive haul. That’s my story and I’m sticking with it!

—Story and photo by Danny Brown
Blue-winged teal in spring plumage

📷 500mm lens + 1.4 teleconverter • f/7.1 • 1/200 sec • ISO 400

*We help people discover nature through our online field guide.
Visit mdc.mo.gov/node/73 to learn more about Missouri’s plants and animals.*





Maintz Wildlife Preserve

Search for some of Missouri's beloved birds at this area maintained especially for bobwhites and other small game.



MAINTZ WILDLIFE PRESERVE is a hot spot for bobwhite quail and doves, but birds aren't all this area has to offer. Located in northwestern Cape Girardeau County, this Conservation Area encompasses 445 acres of grassland and expanses of woodland and cropland amid the rolling hills of Southeast Missouri.

Maintz Wildlife Preserve offers exceptional in-season hunting opportunities for deer and turkey, as well as small game including dove, quail, rabbit and squirrel. Hunters in the market for small game must obtain an area daily hunting permit at one of the parking lots. If you're an archery hunter, bring your bow for some pre-season practice at the area's 12-station archery range. A local chapter of the Christian Bowhunters of America, On Target Archers out of Fruitland, continues to work in cooperation with MDC to expand and maintain this range.

MDC maintains Maintz Wildlife Preserve especially for bobwhite quail and other grassland birds, so quality early successional habitat—a stage of plant growth that features an open understory with scattered plants—is key. Such a habitat encourages a good quail population by providing seed production, insect foraging opportunities and easy mobility for quail and their broods.

Maintz Wildlife Preserve managers use techniques such as prescribed burning, disking, timber stand improvement, edge feathering and rotational farming to promote early successional habitat. The area's fields feature warm-season grasses and prairie wildflowers that provide nesting cover and brood-rearing habitat for upland birds and small game. Local farmers plant crop fields and leave a portion of crop standing over winter for wildlife food.

Each year MDC plants several fields of sunflowers to attract flocks of doves during their fall migration. Dove hunting can be very good during the first few weeks of the statewide dove season, which begins Sept. 1.

Nine fishing lakes and ponds dot the landscape. Fishing is best at several ponds stocked with largemouth bass, bluegill and channel catfish. Additionally, some small, fishless ponds and a larger seasonal wetland harbor habitat for waterfowl and shorebirds.

Maintz Wildlife Preserve is located northwest of Jackson. To reach the area, take Route B north, then County Road 472 west 1.5 miles. Visit the Maintz Wildlife Preserve website (listed below) for information including a brochure and map.

—Rebecca Maples, photo by David Stonner

📷 16–35mm lens • f/2.8 • 1/500 sec • ISO 200

Recreation opportunities: Archery range, bird watching, camping, fishing, hiking and hunting in season

Unique features: This area features habitat maintained especially for bobwhite quail and other small game, along with in-season hunting opportunities and nine fishing lakes and ponds.

For More Information

Call 573-290-5730 or visit mdc.mo.gov/a7712.



Hunting and Fishing Calendar

FISHING

	OPEN	CLOSE
Black Bass from Ozark streams	5/26/12	2/28/13
Bullfrogs and Green Frogs	Sunset 6/30/12	Midnight 10/31/12
Nongame Fish Giggling	9/15/2012	1/31/2013
Trout Parks 3/01/12	10/31/12	

HUNTING

	OPEN	CLOSE
Coyote	5/07/12	3/31/13
Deer		
Archery	9/15/12 11/21/12	11/09/12 1/15/13
Firearms		
Urban Zones	10/05/12	10/08/12
Early Youth	11/03/12	11/04/12
November	11/10/12	11/20/12
Antlerless	11/21/12	12/02/12
Alternative Methods	12/15/12	12/25/12
Late Youth	12/29/12	12/30/12
Dove	9/01/12	11/09/12
Furbearers	11/15/12	1/31/13
Groundhog	5/09/12	12/15/12
Pheasant		
Youth (North Zone Only)	10/27/12	10/28/12
North Zone	11/01/12	1/15/13
Southeast Zone	12/01/12	12/12/12
Quail	11/01/12	1/15/13
Youth	10/27/12	10/28/12
Rabbit	10/01/12	2/15/13
Rails (Sora and Virginia)	9/01/12	11/09/12
Squirrel	5/26/12	2/15/13
Turkey		
Archery	9/15/12 11/21/12	11/09/12 1/15/13
Firearms	10/1/12	10/31/12
Waterfowl	please see the <i>Waterfowl Hunting Digest</i> or see mdc.mo.gov/node/3830	
Wilson's (common) Snipe	9/01/12	12/16/12
Woodcock	10/15/12	11/28/12

TRAPPING

	OPEN	CLOSE
Beaver and Nutria	11/15/12	3/31/13
Furbearers	11/15/12	1/31/13
Otters and Muskrats	11/15/12	2/20/13

For complete information about seasons, limits, methods and restrictions, consult the *Wildlife Code* or the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, *The Spring Turkey Hunting Regulations and Information*, *the Fall Deer and Turkey Hunting Regulations and Information*, *the Waterfowl Hunting Digest* and *the Migratory Bird Hunting Digest*. For more information visit mdc.mo.gov/node/130 or permit vendors.

Contributors



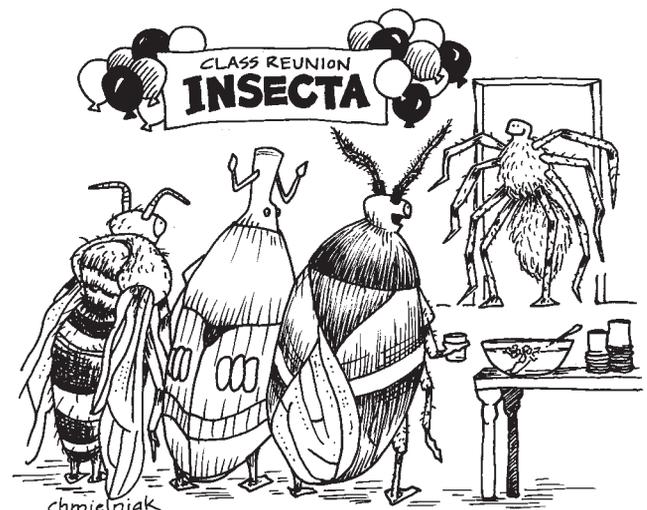
BRETT DUFUR, an MDC editor, is writing a history of the Department for its 75th anniversary. He has authored numerous books on Missouri's outdoors including the Katy Trail, wine country and the Lewis and Clark Trail. He lives in Rocheport with his family and loves to paddle the Missouri River and explore wild places.

MARK GRUEBER has been an urban and community forester for the past 12 years. Besides a deep and abiding love of trees and forest ecology, he also enjoys kayaking and fishing Missouri's beautiful rivers, as well as cheering on his favorite family and professional athletes.



JAKE HINDMAN, an MDC outdoor education center supervisor, enjoys the excitement and action of calling wildlife. He speaks around the state encouraging people to discover nature by communicating with wildlife. Jake values his time spent outdoors and is usually packing a firearm, bow or rod and reel.

ANGIE WEBER, community conservation planner, was born with a love of the outdoors. Her favorite childhood memories include creekin' and camping with her family along Paddy Creek, a tributary of the Big Piney River. Angie's hobbies include landscaping with native plants and spending time at her parents' rustic B&B.



"What's Archie doing here? He's from our Phylum, not our Class."

AGENT NOTES

Practice Now for the Fall Hunting Season

WITH THE BUSY fall hunting seasons right around the corner, this is the perfect time to dust off your firearms or bows and practice. I have talked to many people who “just barely” missed their shot at the game they were hunting. When I have asked if they practiced with their firearm or bow, many times the answer was “no.” Practicing with your hunting tool of choice increases your chance of success.

The Missouri Department of Conservation has more than 70 public ranges available for your practicing needs. Details on these ranges including their rules, hours of operation, and more may be found at mdc.mo.gov/node/6209. You can also contact your regional conservation office (see Page 3) for more information about public shooting ranges.

Here are some tips to remember if you plan on practicing with your firearm or bow. First and most important, remember your firearm/bow safety rules and follow them. Always point your muzzle or arrow in a safe

direction. Wear the clothes you expect to wear during your hunt. Bulky clothing may affect your shot accuracy. Use the same ammunition or arrows that you plan on using during your hunt. Practice ammunition or arrows may be less accurate than those you will use on your hunt. Finally, be patient and take your time.

I hope a little practice will bring a greater experience to your hunt this fall. I look forward to meeting many of you at our great public shooting ranges. If you have not yet taken the Missouri Hunter Education Class, now is a great time to find a course near you or take the online course. To find more information about Hunter Education, go to mdc.mo.gov/node/3722.



Adam Arnold is the conservation agent for Clinton County. If you would like to contact the agent for your county, phone your regional conservation office listed on Page 3.

Celebrate National Hunting and Fishing Day Sept. 22

Conservation makes Missouri a great place to hunt and fish, and enriches our quality of life. National Hunting and Fishing Day is a time to enjoy the successes of our conservation legacy. We encourage you to go visit a shooting range, hunt or fish, Saturday, Sept. 22 as outdoors enthusiasts nationwide take the time to show their appreciation for the work done by sportsman and conservation leaders both past and present.



Jay Henges Shooting Range near St. Louis

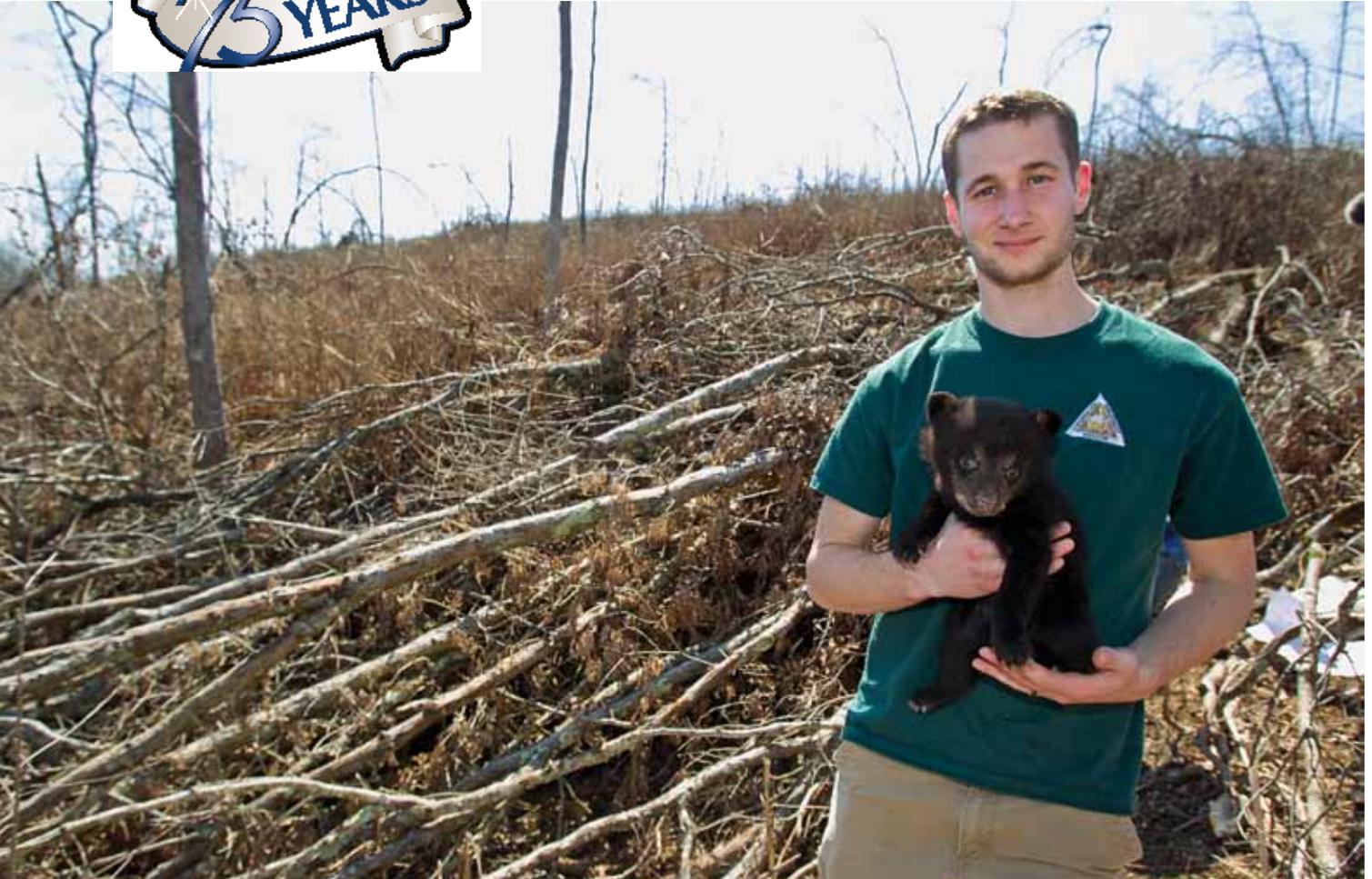
MDC will be hosting two events to commemorate the day.

- Jay Henges Shooting Range in the St. Louis area from 10 a.m. to 4:30 p.m. All shooters will receive one free hour of rifle/pistol time, or one free round of trap, shotgun patterning or archery. To learn more about Jay Henges Shooting Range, visit mdc.mo.gov/node/299.
- Andy Dalton Shooting Range and Outdoor Education Center in the Springfield area from 8:30 a.m. to 4 p.m. There will be fishing and shooting plus lots of conservation groups and displays to enjoy. We will provide the firearms and ammunition and the bows and arrows, but you must bring your own fishing equipment and bait. For more information please call 417-742-4361. To learn more about Andy Dalton Shooting Range and Outdoor Education Center, visit mdc.mo.gov/node/288.

Missouri has a rich history of conservation work and dedicated sportsmen. This year marks the 75th anniversary of MDC. In that time, MDC has become a national leader in forest, fish and wildlife resource management and restoration, and hunter and angler recruitment. To learn more about MDC's science-based conservation work, read the feature article starting on Page 10. To learn more about MDC's citizen-led conservation efforts over the past 75 years, visit mdc.mo.gov/node/16137.



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I Am Conservation

Spencer Lynch, an MDC resource assistant involved with black bear research, holds a bear cub while doing a den survey. Lynch said that sometimes a bear den will be in a pile of brush, but other times it will be 20 feet up inside a hollow tree. "We start by getting a good idea of where there is a potential den by tracking the bear with a GPS collar," said Lynch. "Once the bear is located, we will very quietly approach it and dart it with a tranquilizer rifle. After the bear is anesthetized, we will gather any cubs in the den and determine their sex and weight and take a hair sample. We then fit the mother with a new GPS collar and quickly reunite her with her cubs." Lynch said the goal of the research is to get a better population estimate of black bear in Missouri. They are also gathering information on the habits and characteristics of that population, such as bear movements, dispersal, denning preferences, sex ratio, genetic diversity and age. Lynch said he considers himself lucky to be helping ensure the presence of bears in Missouri for generations to come. "Growing up in southwest Missouri, I always hoped I would get a chance to just see a black bear someday," said Lynch. "I never thought I would be lucky enough to be crawling in and out of their dens with cubs in my arms." For more information on bears in Missouri, visit fwrc.msstate.edu/carnivore/mo_bear/. —Photo by David Stonner